

Claims

1. A method of assembling and operating a physical system from a remote location, such physical system having a plurality of structural elements and structural interconnections, such method comprising the steps of:
- 5 creating a graphical representation of the physical system at the remote location showing the elements and connections of the system to be assembled;
- 10 converting the graphical representation into an element list delineating the elements, interconnections, and configurable properties of the elements;
- transferring the element list from the remote location to an element controller; and
- 15 assembling and operating the system by the element controller in accordance with the element list.
2. The method of assembling and operating a physical structure of a system as in claim 1 wherein the step of
- 20 creating the graphical representation further comprises providing a graphical user interface with an assembly area for display of the graphical representation and a reference area for display of icons of structural elements, forcing functions and measurement instruments.
- 25
3. The method of assembling and operating a physical structure of a system as in claim 2 further comprising dragging icons of elements from the reference area to the graphical representation in the assembly area.
- 30
4. The method of assembling and operating a physical structure of a system as in claim 3 further comprising connecting the icons of the elements in the assembly area.

transferring a graphical representation of the system response to the remote location.

12. The method of assembling and operating a physical
5 structure of a system as in claim 1 further comprising
defining the element list as a netlist.

13. Apparatus for assembling and operating a physical
system having a plurality of structural elements and
10 structural interconnections from a remote location, the
apparatus method comprising:

means for creating a graphical representation of
the physical system at the remote location showing the
elements and connections of the system to be assembled;

15 means for converting the graphical representation
into an element list delineating the elements, the
interconnections, and configurable properties of the
elements;

20 means for transferring the element list from the
remote location to an element controller; and

means for assembling and operating the system by
the element controller in accordance with the element
list.

25 14. The apparatus for assembling and operating a
physical structure of a system as in claim 13 wherein
the means for creating the graphical representation
further comprises means for providing a graphical user
interface with an assembly area for display of the
30 graphical representation and a reference area for
display of icons of structural elements, forcing
functions and measurement instruments.

15. The apparatus for assembling and operating a physical structure of a system as in claim 14 further comprising means for dragging icons of system elements to the graphical representation in the assembly area.

16. The apparatus for assembling and operating a physical structure of a system as in claim 15 further comprising means for connecting the icons of the elements in the assembly area.

.17. The apparatus for assembling and operating a physical structure of a system as in claim 13 further comprising means for spawning a task object within the element controller in response to receipt of the element list.

18. The apparatus for assembling and operating a physical structure of a system as in claim 17 further comprising means for composing the task object from a set of user-requested task elements.

19. The apparatus for assembling and operating a physical structure of a system as in claim 18 wherein a means for composing a modified task object from a set of available task elements further comprises means for validating the measurement elements against a set of instrument and structural element limitations.

20. The apparatus for assembling and operating a physical structure of a system as in claim 19 wherein the means for assembling the system further comprises means for closing a set of contacts within a matrix switch.

21. The apparatus for assembling and operating a physical structure of a system as in claim 20 wherein the means for operating the system further comprises means for connecting a forcing function to the assembled elements.

22. The apparatus for assembling and operating a physical structure of a system as in claim 21 further comprising means for recording a system response to the forcing function.

23. The apparatus for assembling and operating a physical structure of a system as in claim 22 further comprising means for transferring a graphical representation of the system response to the remote location.

24. Apparatus for assembling and operating a physical system having a plurality of structural elements and structural interconnections from a remote location, the apparatus method comprising:

a remote terminal adapted to create a graphical representation of the physical system at the remote location showing the elements and connections of the system to be assembled;

a conversion processor adapted to convert the graphical representation into an element list delineating the elements and the interconnections;

a communication processor adapted to transfer the element list from the remote location to an element controller; and

the element controller adapted to assemble and operate the system by the element controller in accordance with the element list.

002260 25210460

25. The apparatus for assembling and operating a physical structure of a system as in claim 24 wherein the remote terminal further comprises a graphical user interface adapted to provide an assembly area for display of the graphical representation and a reference area for display of icons of structural elements, forcing functions and measurement instruments.
26. The apparatus for assembling and operating a physical structure of a system as in claim 25 further comprising a pointer adapted to drag icons of system elements to the graphical representation in the assembly area.
27. The apparatus for assembling and operating a physical structure of a system as in claim 26 further comprising a connector routine adapted to connect the icons of the elements within the assembly area.
28. The apparatus for assembling and operating a physical structure of a system as in claim 27 further comprising a task object adapted to decompose the element list into a set of task elements.
29. The apparatus for assembling and operating a physical structure of a system as in claim 28 further comprising a forcing function adapted to load the physical system.

30. The apparatus for assembling and operating a physical structure of a system as in claim 29 further comprising a measurement instrument adapted to record a system response to the forcing function.

5

31. The apparatus for assembling and operating a physical structure of a system as in claim 28 further comprising a matrix switch adapted to interconnect the structural elements, the forcing function and the measurement instrument of the physical system.

10

32. The apparatus for assembling and operating a physical structure of a system as in claim 31 further comprising a modified task object adapted to transfer a graphical representation of the system response to the remote location.

15

項目	1994年	1995年	1996年	1997年	1998年	1999年	2000年	2001年	2002年	2003年	2004年	2005年	2006年	2007年	2008年	2009年	2010年	2011年	2012年	2013年	2014年	2015年	2016年	2017年	2018年	2019年	2020年	2021年	2022年	2023年	2024年	2025年	2026年	2027年	2028年	2029年	2030年	2031年	2032年	2033年	2034年	2035年	2036年	2037年	2038年	2039年	2040年	2041年	2042年	2043年	2044年	2045年	2046年	2047年	2048年	2049年	2050年	2051年	2052年	2053年	2054年	2055年	2056年	2057年	2058年	2059年	2060年	2061年	2062年	2063年	2064年	2065年	2066年	2067年	2068年	2069年	2070年	2071年	2072年	2073年	2074年	2075年	2076年	2077年	2078年	2079年	2080年	2081年	2082年	2083年	2084年	2085年	2086年	2087年	2088年	2089年	2090年	2091年	2092年	2093年	2094年	2095年	2096年	2097年	2098年	2099年	2100年																																																															
人口	120,000,000	121,000,000	122,000,000	123,000,000	124,000,000	125,000,000	126,000,000	127,000,000	128,000,000	129,000,000	130,000,000	131,000,000	132,000,000	133,000,000	134,000,000	135,000,000	136,000,000	137,000,000	138,000,000	139,000,000	140,000,000	141,000,000	142,000,000	143,000,000	144,000,000	145,000,000	146,000,000	147,000,000	148,000,000	149,000,000	150,000,000	151,000,000	152,000,000	153,000,000	154,000,000	155,000,000	156,000,000	157,000,000	158,000,000	159,000,000	160,000,000	161,000,000	162,000,000	163,000,000	164,000,000	165,000,000	166,000,000	167,000,000	168,000,000	169,000,000	170,000,000	171,000,000	172,000,000	173,000,000	174,000,000	175,000,000	176,000,000	177,000,000	178,000,000	179,000,000	180,000,000	181,000,000	182,000,000	183,000,000	184,000,000	185,000,000	186,000,000	187,000,000	188,000,000	189,000,000	190,000,000	191,000,000	192,000,000	193,000,000	194,000,000	195,000,000	196,000,000	197,000,000	198,000,000	199,000,000	200,000,000	201,000,000	202,000,000	203,000,000	204,000,000	205,000,000	206,000,000	207,000,000	208,000,000	209,000,000	210,000,000	211,000,000	212,000,000	213,000,000	214,000,000	215,000,000	216,000,000	217,000,000	218,000,000	219,000,000	220,000,000	221,000,000	222,000,000	223,000,000	224,000,000	225,000,000	226,000,000	227,000,000	228,000,000	229,000,000	230,000,000	231,000,000	232,000,000	233,000,000	234,000,000	235,000,000	236,000,000	237,000,000	238,000,000	239,000,000	240,000,000	241,000,000	242,000,000	243,000,000	244,000,000	245,000,000	246,000,000	247,000,000	248,000,000	249,000,000	250,000,000	251,000,000	252,000,000	253,000,000	254,000,000	255,000,000	256,000,000	257,000,000	258,000,000	259,000,000	260,000,000	261,000,000	262,000,000	263,000,000	264,000,000	265,000,000	266,000,000	267,000,000	268,000,000	269,000,000	270,000,000	271,000,000	272,000,000	273,000,000	274,000,000	275,000,000	276,000,000	277,000,000	278,000,000	279,000,000	280,000,000	281,000,000	282,000,000	283,000,000	284,000,000	285,000,000	286,000,000	287,000,000	288,000,000	289,

21